Introduction to the Graphical Desktop System

We will be Covering ...

- Starting X in Text/Graphical Mode
- Shutting Down the System
- Logging in to the System
- Window Managers/Desktop Environments
- GNOME Desktop
- Basic Navigation
- Basic Desktop Customization
- KDE Desktop (minimal)

What is X?

- The X Window System
- Foundation of the Graphical User Interfaces (GUI) and windowing systems on Unix and Linux
- Client-server model
- X client – graphical applications running on local or remote computers
- X server – controls the graphics and input/output hardware; runs on the display station

- The X client is the application program e.g. a word processor, running on a host while the X server runs on the workstation or PC on which the application receives its input and on which the output is to be dispkayed. The X client and server may run on the same computer or on different computers over a network.
- Unlike other popular computer graphical systems, e.g. Micorsoft Windows, X is network ready in that the application need not be running on the same physical computer as the display and input devices for the application. So under X, an application may obtain its input/output from another computer which is remotely located.
- The graphical desktop system that the user interacts with consists of several programs running on top of X. These include a window manager and a desktop environment.
- Linux systems make use of an open source implementation of X called Xfree86 (http://www.xfree86.org/).

Starting X

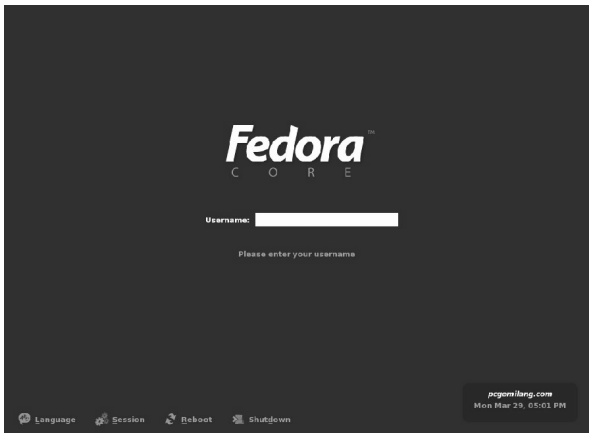
- X has to be started before the graphical desktop user interface can run
- X started automatically if system configured for graphical login
- X has to be manually started if no graphical login

Logging in ...

- Need to perform a login
- At login prompt enter username
- Then enter password at password prompt
- Choice of graphical or text login screen

- In order to start using your system you will usually have to perform what is known as a user login. This procedure is necessary to identify yourself to the system. The system allows multiple users to use it concurrently and so it has to be able to identify a user in order to grant them the necessary privileges and rights to use the system and applications. Each user upon successful login will be assigned to his home directory (folder).
- Some systems may have been set up so that upon power-on, a default user is logged in automatically.
- There is a special user called the **root** or **superuser** (this user is usually created during the system installation) which has unlimted access and rights to all the system files and resources. You only need to login as root if certain system level administrative tasks are to be carried out. Otherwise there is usually no need for a normal user to login as root. This is to prevent accidentally damaging the system by deleting or modifying important system files.

Login Screens



Graphical login screen

Login Screens

```
Fedora Core release 1
Kernel 2.4.22-1 on an i686

localhost login:
```

Text-based login screen

The Graphical Desktop

- Upon successful graphical login the graphical desktop will be dsiplayed
- If a text-based login is used, run the “startx” command to get the graphical desktop

Logging out ...

- Need to log out after finishing work
- For graphical desktop, select

  Main Menu --> Logout
- For command line, enter

  [anita@localhost anita]$ exit
- On successful logout, the login screen will be displayed

Shutting down ...

- Need to shutdown before power-off
- For graphical desktop, logout first and then select “Shut down” at the graphical login screen
- For command line, login as root and then enter

```
[root@localhost root]# shutdown -h now
```


- It is very important that a proper system shutdown is made. You should not just turnoff the power switch of the computer to shut it down. Failure to observe this may lead to system software and data corruption and failure.

The Desktop Environment

- A common graphical user interface and platform
- A collection of X clients working together
- Similar look and feel
- Facilitates inter-process communication and passing of data
- Drag-and-drop, cut-and-paste between processes and applications

The Desktop Environment

Two commonly used ones:

- GNOME - default for Fedora
- KDE

- Both GNOME and KDE come with a set of advanced productivity tools and applications e.g. text editors, wordprocesors, spreadsheets and web browsers
- KDE applications can run in GNOME and vice versa if the graphic libraries required by each of these desktop environments are available

Window Managers

- X client programs to control a graphical window e.g. moving, resizing, positioning, opening, closing
- Standalone or part of a desktop environment
- Metacity - default window manager for Fedora

- Other window managers included are KWin and twm.
- The window managers can be run without the desktop environments

Excercise

Run these window managers outside of the desktop environment. To do this, login as root and make the sysetm go to run level 3 so that X and the graphical desktop are not running.

```
# Init 3
```

You will be presented with a text-based prompt. Enter at the command line:

```
$ xinit -e <path-to-window-manager>
```

e.g.

```
$ xinit -e /usr/bin/metacity
```

The GNOME Desktop

- Default desktop environment
- 3 main components - the menu system, the panel, the desktop itself

The Menu System

- Click on the Main Menu button
- Fedora Linux - Main Menu button is a red fedora (a type of red hat)
- Sub-menus within menu
- Click on entry to launch application

- From the menu system you can start many of the applications installed on your Linux system. Note that the menu system consists of a main menu panel and sub-menu panels. Each entry in the menu system which has an arrow on its right means that it is an entry point to a sub-menu, and there can be sub-menus within each sub-menu. In this way applications in the menu system can be organised and categorised for easy reference and access.

- To access a the sub-menu associated with a menu entry, move the mouse and rest it on the menu entry in question and a sub-menu panel will appear.

- Clicking once on a menu entry will cause an application associated with it to be launched, i.e. executed.

The Panel

- Long bar across the bottom of the desktop
- Main menu icon, the application launcher icons, notification area and applets

- Installed by default are several application launcher icons on the panel. Clicking on one of these will run an application. Commonly accessed applications can be added to the panel and those that are less frequently used can be taken off.

- The notification area holds alert icons so that the user can be alerted to critical messages.

Panel Applets

Small applications that run on the panel; perform useful tasks e.g.

- Workspace switcher
- Taskbar
- Screenshot
- Clock
- Sticky Notes

- Applets are small applications that run on the panel. These usually perform useful and informative tasks like setting the sound level of the soundcard, monitoring whether the system software needs an update, etc. By default the following applets are run.

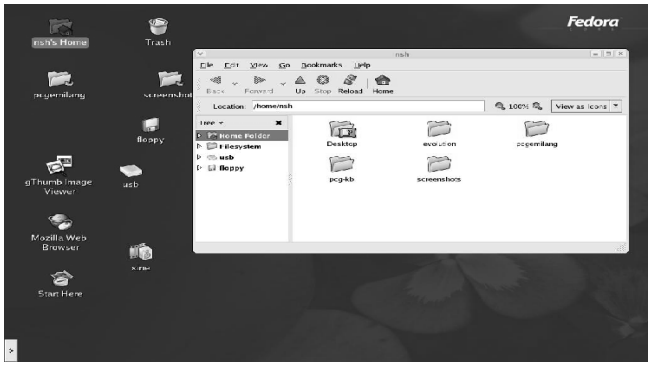
  The Workspace Switcher

  By default the user has 4 desktop workspace areas to work on. The workspace switcher represents each workspace as a small square and shows the applications running in each of them. To access a wrokspace click on the square with the mouse.

  The Taskbar

  The taskbar applet is located next to the workspace switcher and shows the titles of all the running applications in a virtual desktop (a workspace).

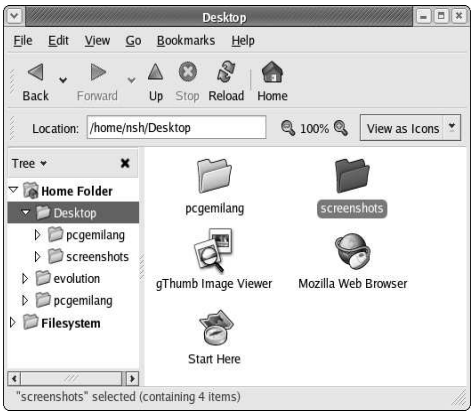
The Desktop



- Icons - short-cuts to application launchers, file folders, files and peripheral devices
- Double-click on icon to launch a program or to open a file or device

- The desktop itself contains icons which are graphical representaions of short-cuts to application launchers, file folders, files and peripheral devices like floppy disks, CD-ROM druves and printers. Double-clicking on an icon representing an application will launch or execute the application. Commonly used applications and/or files/folders are usually placed on the desktop space.

The Window Manager



- Titlebar
- Minimise, (un) maximise, close buttons
- Window menu button
  - rollup
  - move
  - resize

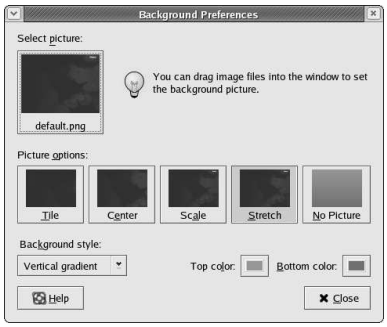
- More details on using the window manager can be obtained by running the “Help” application on the Main Menu. After running the Help application choose:

  Desktop --> Windows --> Manipulating Windows

Exercise

- Practice the following window operations with the mouse:
  - Minimise
  - Maximise
  - Move
  - Resize
  - Rollup
  - Close
- Repeat above operations using the keyboard

Desktop Customisation



- Background
- Theme
- Fonts
- Menus and toolbars
- Use

  Main Menu --> Preferences

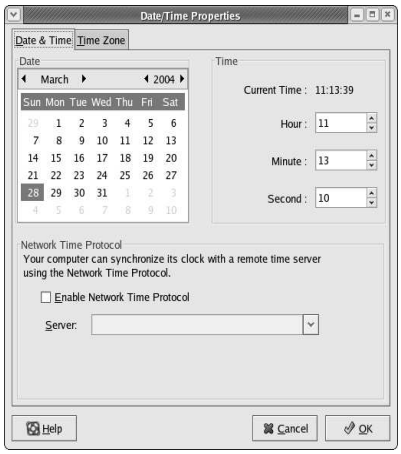
- The desktop can be customised to your preferences and tastes in a variety of ways. More details can be obtained by running the “Help” application on the Main Menu. After running the Help application choose::

  Desktop --> Basic Preferences

Exercise

- Change the following on the desktop:
  - Background
  - Theme
  - Fonts
  - Menus and toolbars

Date and Time



- Important to set correct date and time
- Main Menu
  --> System Settings
  --> Date & Time
- Appearance of desktop clock can be changed

- It is important that the date and time are set correctly in your system. This will make it easier to manage the system resources and files and also aid in troubleshooting any problems. To set the date and time, run the Date & Time application tool from the System Settings sub-menu under the Main Menu.

  Main Menu --> System Settings --> Date & Time

- A dialog box asking for the root password will appear if you are not logged in as root. This is because the system date and time are important system parameters and so only the system administrator or root is allowed to do it.

- Check that the time zone is set correctly too.

- Usually the system uses the local time, so do not select the “System clock uses UTC” checkbox.

Exercise

- Practice setting the date and time.
- Practice changing the appearance of the desktop clock

Using the GNOME Desktop

- On desktop can be found
  - Application launchers
  - Files and folders
- Run application from:
  - Main menu
  - Panel
  - Desktop proper
- Open file or folder using:
  - Icon on desktop
  - File manager

- To run an application from the Main Menu, open up the menu, select the application therein and click on the application listed in the menu bar
- To run an application from the panel, click once on the icon representing the application
- To run an application from the desktop itself, double-click on the icon representing the application
- To open a file/folder on the desktop, double-click on it or use the file manager
- Icons representing short-cuts to running an application can also be added on the panel or desktop proper itself by the user.

Exercise

- Add the calculator application to the panel and run it
- Add the gedit text editor application to the desktop and run it
- Remove the calculator application from the panel
- Remove the gedit text editor application from the desktop

The KDE Desktop

- An alternative to GNOME, widely used in Linux and other OSS platforms
- To switch to KDE use:

Main menu --> System Settings -->

More System Settings --> Desktop Switching Tool

- Select KDE, logout and re-login
- Note the similarities and differences with GNOME

- KDE has many similarities as well as some differences with the GNOME desktop
- KDE makes use of the Main Menu, Panel and the desktop too
- Use KDE Control Centre for desktop customisation
- Entries in the Main Menu are not identical
- The KDE-aware applications may be different from GNOME-aware applications.
- Some differences in handling the placement of icons on the desktop and panel
- Right-clicking an icon brings up different options

Exercise

- Change the background and screensaver on the desktop
- Place a new applet on the panel
- Place a new application launcher icon on the desktop

Thank You!

Colin Charles, Nah Soo Hoe, William Wong
byte@aeon.com.my, nsh@pop.jaring.my,
wengyeew@yahoo.com.sg

http://training.bytebot.net/linux/